

INJECTION MOLDING OF 316L STAINLESS STEEL POWDER USING PALM OIL BINDER SYSTEM

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ABSTRACT

This paper focuses on the investigation to produce sintered specimen of stainless steel parts produced by vertical injection molding technique. The stainless steel powder was mixed using z-blade mixer with the thermoplastic binder system comprising of polyethylene, paraffin wax, stearic acid, palm stearin and palmitic acid at different volume percent (%). The feedstock then was studied in term of viscosity and shear rate using capillary rheometer. The feedstock was molded using vertical injection molding machine. After molding, the green molded specimen was immersed into the solvent to extract partly of the binder system. The specimens then were sintered under vacuum atmosphere at the temperature of 1360 °C. The physical and mechanical properties of the sintered specimen such as density, hardness, porosity, shrinkage, weight loss, ultimate tensile strength and elongation achieved the minimum requirement for the Standard Metal Powder Industries Federation (MPIF) 35. The microstructure of the sintered specimens was also shown the twin structure of stainless steel and also ferrite and pearlite phase.

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